REMARKS

I. Introduction

With the addition of claims 11 to 15 and the cancellation of claim 9 herein without prejudice, claims 1 to 5 and 10 to 15 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

II. Interview Summary

Applicants thank the Examiner for the courtesies extended during the course of the telephone interview conducted on December 1, 2004.

During the course of the telephone interview, no exhibit was shown and no demonstration was conducted.

During the course of the telephone interview, claim 1 was discussed.

During the course of the telephone interview, U.S. Patent No. 3,653,946 to Fefferman was discussed.

During the course of the telephone interview, Applicants argued with respect to claim 1 that no single embodiment of Fefferman discloses the step of smearing a prepared coating on a quartz or aluminum-oxide-containing tube to form a film thereon after a first drying step. Applicants pointed out that the coating referenced by the Examiner was applied to a tube already having a gold coating.

Applicants suggested amending claim 1 to recite that a prepared coating is smeared directly on a quartz or aluminum-oxide-containing tube to form a film thereon after a first drying step.

III. Objection to the Claims

Claim 9 was objected to under 37 C.F.R. §1.75(c) as being of improper independent form. Claim 9 has been canceled without prejudice thus rendering this objection moot. Therefore, withdrawal of this objection is respectfully requested.

IV. Rejection of Claims 1, 4, 9 and 10 Under 35 U.S.C. §103(a)

Claims 1, 4, 9 and 10 were rejected under 35 U.S.C. §103(a) as unpatentable over the combination of U.S. Patent No. 5,052,382 ("Wainright"), U.S. Patent No. U.S. Patent No. 3,653,946 ("Fefferman"), U.S. Patent No. 2,984,575 ("Fitch"), U.S. Patent No. 3,607,379 ("Leinkram et al. ") and U.S. Patent No. 5,795,841 ("Kuerschner et al."). Applicants respectfully submit that the combination of Wainright, Fefferman, Fitch,

Leinkram et al. and Kuerschner et al. does not render unpatentable the present claims as amended for the following reasons.

Claim 1 relates to a method of producing an ozone generator electrode, which ozone generator electrode includes a gilded quartz or aluminum-oxide-containing tube. Claim 1 recites that the method includes preparing coating material which contains gold, cleansing a quartz or aluminum-oxide-containing tube, drying the quartz or aluminum-oxide-containing tube in a first drying step after the cleansing step, smearing the prepared coating material on the quartz or aluminum-oxide-containing tube to form a film thereon after the first drying step, putting the dried quartz or aluminum-oxide-containing tube into a stove after the second drying step, which is maintained at the temperature between 780 to 880°C, to bake for 10 to 14 hours, and retrieving the tube after the temperature in the stove is below 110°C, and putting the tube under room temperature. Claim 1 has been amended herein without prejudice to recite that the prepared coating material is smeared ***directly*** on the quartz or aluminum-oxide-containing tube. Support for this amendment may be found, for example, in the Specification at p. 3, line 29 to p. 4, line 5.

Wainright purports to relate to an apparatus for the controlled generation and administration of ozone, Fefferman purports to relate to a method of depositing an adherent gold film on the surfaces of a suitable substrate, Fitch purports to relate to gold tertiary mercaptides and method for the preparation thereof, and Kuerschner et al. purport to relate to a process for producing coated, nonporous support materials. The Final Office Action contends that Fefferman describes "preparing a coating material which contains gold[,] cleansing the substrate . . .which may be alumina[,] brushing . . . the prepared coating material on the substrate to form a film thereon[,] drying the substrate[,] baking the substrate at a temperature of 427-1054°C to form a gold film[,] and cooling the substrate to room temperature." Final Office Action at pp. 2 to 3. The Final Office Action admits, inter alia, that Fefferman does not disclose baking at 780 to 880°C for 10 to 14 hours. Final Office Action at p. 4. The Final Office Action states that Fefferman discloses a temperature range that overlaps the claimed temperature range but admits that the baking time described by Fefferman is shorter that the claimed baking time. The Final Office Action contends that Kuerschner et al. describe that "adhesion of metals, such as gold . . .to ceramic substrates, such as alumina or quartz . . . may be improved by heating at 200-1000°C for 0.5 to 24 hours." Final Office Action at p. 4. The Final Office Action contends that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected a temperature and time form [sic] within the claimed ranges because [Kuerschner et

al.] disclose[] that they are operative for increasing the adhesion of metals to ceramics." Final Office Action at p. 4.

Applicants respectfully submit that the previously submitted Second Affidavit of Kuang-Lang Huang, including the photograph attached thereto, clearly establishes that the specific baking temperature range of claim 1 produces unexpected results for a coating of a tube for an ozone generating electrode. The quality of gold coating disclosed by the references cited would not emulate that of the coating formed by the method as claimed. Notwithstanding the above, as indicated above, claim 1 has been amended to recite that the prepared coating material is smeared ***directly*** on the quartz or aluminum-oxide-containing tube. Applicants respectfully submit that the combination of Wainright, Fefferman, Fitch, Leinkram et al and Kuerschner et al. does not disclose, or even suggest, (i) ***directly*** smearing the prepared coating material on the quartz or aluminum-oxide-containing tube to form a film thereon, and (ii) retrieval of the quartz or aluminum-oxide-containing tube after the temperature in the stove is below 110°C and putting the tube under room temperature, as recited in amended claim 1, for the following reasons.

In the first coating step, the Fefferman substrate is stated to be spun coated with one of two mixtures, heated to 1400°F and then allowed to cool slowly through normal radiation (2 hours) to 400°F, whereupon it is stated to be removed from the furnace. See col. 4, lines 34 to 49, for details regarding application of a first possible mixture, and col. 4, line 49 to col. 5, line 6 for details regarding application of a second possible mixture. Although the first coating is directly applied to the substrate, the substrate is not retrieved from the stove after the temperature is below 110°C and then put in room temperature, as recited in claim 1. Rather, the substrate is stated to be removed from the furnace at 400°F (204.4°C).

In a second coating step, the substrate, ***already coated with gold***, is stated to be further dipped in a gold citrate bath solution. The substrate stated to heated to 1,200°F and then allowed to slowly cool through normal radiation to room temperature (3 hours). See col. 5, line 6 to 12. Heating the tube with the second coating and then putting it to room temperature, even if done per the requirements of claim 1 (which is not the case), does not meet all of the limitations of claim 1, given that the claim is specific to a coating applied ***directly*** on the tube. The second coating is applied over the first coating and, therefore, is not applied directly to the tube.

As further regards the "retrieving the tube after the temperature in the stove is below 110°C," the Final Office Action again contends that Fefferman describes "that the cooling of the substrate should be controlled in order to reduce stress" and that "[t]he

Examples indicate that this may be done by leaving the substrate in the furnace . . .until a certain temperature is reached." Final Office Action at p. 4 to 5. However, Fefferman state at col. 4, lines 46 to 48 that "[t]he substrate was allowed to cool slowly through normal radiation . . . to ***400°F*** [approximately ***204°C***] whereupon it was removed from the furnace" (emphasis added). See also, col. 5, lines 4 to 6. Accordingly, Fefferman does not disclose, or even suggest, "retrieving the tube after the temperature in the stove is below 110°C" as recited in claim 1. As to the unsupported contention that the description of Fefferman "at col. 5, lines 10-12 makes it appear that the substrate may also be left in the oven until it reaches room temperature," the Final Office Action continues to merely rely on nothing more than pure speculation and conjecture as to the statement of Fefferman located at col. 5, lines 10 to 12, to wit, "[a]fter reaching 1,200°F, the substrate is allowed to cool slowly through normal radiation to room temperature (3 hours)." It is respectfully submitted that the statement that "[a]fter reaching 1,200°F, the substrate is allowed to cool slowly through normal radiation to room temperature (3 hours)" does not provide a disclosure, or even a suggestion, of "retrieving the tube after the temperature in the stove is below 110°C, and putting the tube under room temperature" as recited in amended claim 1.

Further, contrary to the assertions contained in the Final Office Action, nothing in referenced col. 5, lines 4 to 12 of Fefferman "indicates that the substrate is not disturbed during cooling." Final Office Action at p. 7. Applicants respectfully request that the Examiner point out specifically what language is being relied upon to in an effort to support the otherwise unsupported assertion that the above excerpt states that the substrate is not removed from the oven during cooling, i.e., not disturbed during cooling. As indicated above, at least at col. 5, lines 4 to 6 Fefferman specifically calls for the removal of the substrate from the oven during cooling.

Further, contrary to the assertions in the Final Office Action nothing in the foregoing excerpt "suggests retrieving the tube from the furnace only after room temperature is reached." Final Office Action at p. 7. The above excerpt specifically calls for cooling the substrate for 3 hours to room temperature. See col. 5, line 12. The excerpt neither indicates what temperature is maintained in the oven after the substrate reaches 1,200° F nor how long it would take the oven to cool to room temperature. Removing the substrate from the hot oven once it reaches 1,200° F is more likely to reduce the temperature of the substrate to room temperature in three hours than leaving the substrate in the hot oven. Further, at least from the perspective of maximizing production efficiency of coated substrates, it appears that one would remove that substrate from the oven as soon as it reaches 1,200° F. In this regard,

Fefferman states that "[a]fter the substrate has been heat-treated to form a continuous adherent gold-film, the substrate is ***cooled*** to room temperature at such a rate as to reduce the amount of stress formed in the substrate and the glassy or crystalline matrix." See col. 3, lines 69 to 73 (emphasis added). Respectfully, ***cooling***, as referenced above, would involve removing the substrate from the oven upon reaching 1,200° F as opposed to reducing the heat produced by the oven. Thus, the conclusions and assertions contained in the Final Office Action are nothing more than pure conjecture or speculation, which cannot sustain an obviousness rejection.

The Final Office Action asserts that "[t]he passage of col. 5, lines 4 to 6 indicates that the process of 'cool[ing] slowly through normal radiation. . .to 400° F' occurs in the furnace," and therefore, that "the teaching of lines 10 to 12 of slowly cool[ing] through normal radiation. . .to room temperature" reasonably appears to occur entirely in the furnace. Applicants respectfully submit that, contrary to the Final Office Action's contentions, the passage of col. 5, lines 4 to 6 supports Applicants' previously stated position. The passage makes clear that when Fefferman wanted the cooling to occur in the furnace Fefferman specifically stated that this was the case, i.e., "cool[ing] slowly through normal radiation. . .to 400° F occurs in the furnace." In the latter passage Fefferman does not state that the cooling occurs in the furnace, and therefore, in no way discloses, or suggests, "retrieving the tube after the temperature in the stove is below 110°C," as recited in claim 1.

In rejecting a claim under 35 U.S.C. §103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). As indicated above, none of the references relied upon disclose, or even suggest, all of the limitations of amended claim 1. It is therefore respectfully submitted that the combination of Wainright, Fefferman, Fitch and Kuerschner et al. does not render unpatentable claim 1. The baking temperature parameters and the unexpected results

achieved by the baking temperature parameters recited in claim 1 are further evidence of the non-obviousness of claim 1.

Moreover, it is respectfully submitted that the cases of In re Fine, supra, and In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992), make plain that the Final Office Action's generalized assertions that it would have been obvious to modify or combine the references do not properly support a § 103 rejection. It is respectfully submitted that those cases make plain that the Final Office Action reflects a subjective "obvious to try" standard, and therefore does not reflect the proper evidence to support an obviousness rejection based on the references relied upon. In particular, the Court in the case of In re Fine stated that:

> The PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. This it has not done. . . .
>
> **Instead, the Examiner relies on hindsight in reaching his obviousness determination. . . . One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.**

In re Fine, 5 U.S.P.Q.2d at 1598 to 1600 (citations omitted; italics in original; emphasis added). Likewise, the Court in the case of In re Jones stated that:

> Before the PTO may combine the disclosures of two or more prior art references in order to establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. . . .
>
> **Conspicuously missing from this record is any evidence, other than the PTO's speculation (if it be called evidence) that one of ordinary skill . . . would have been motivated to make the modifications . . . necessary to arrive at the claimed [invention].**

In re Jones, 21 U.S.P.Q.2d at 1943, 1944 (citations omitted; italics in original).

That is exactly the case here since it is believed and respectfully submitted that the present Final Office Action offers no evidence whatsoever, but only conclusory hindsight, reconstruction and speculation, which these cases have indicated does not constitute evidence

that will support a proper obviousness finding. Unsupported assertions are not evidence as to why a person having ordinary skill in the art would be motivated to modify or combine references to provide the claimed subject matter of the claims to address the problems met thereby. Accordingly, the Office must provide proper evidence of a motivation for modifying or combining the references to provide the claimed subject matter.

More recently, the Federal Circuit in the case of In re Kotzab has made plain that even if a claim concerns a "technologically simple concept" — which is not the case here — there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed," stating that:

> In this case, the Examiner and the Board fell into the hindsight trap. The idea of a single sensor controlling multiple valves, as opposed to multiple sensors controlling multiple valves, is a technologically simple concept. With this simple concept in mind, the Patent and Trademark Office found prior art statements that in the abstract appeared to suggest the claimed limitation. But, there was no finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge of Kotzab's invention to make the combination in the manner claimed. In light of our holding of the absence of a motivation to combine the teachings in Evans, we conclude that the Board did not make out a proper prima facie case of obviousness in rejecting [the] claims . . . under 35 U.S.C. Section 103(a) over Evans.

In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added). Again, it is believed that there have been no such findings.

Of course, objective evidence, including evidence of unexpected results, are relevant and must be considered in every case in which they are present. See, Graham v. John Deere, 383 U.S. 1 (1966).

In view of all of the foregoing, it is respectfully submitted that the combination of Wainright, Fefferman, Fitch, Leinkram et al. and Kuerschner et al. does not render unpatentable claim 1.

As for claims 4, 9 and 10, which ultimately depend from claim 1 and therefore include all of the limitations of claim 1, it is respectfully submitted that the combination of Wainright, Fefferman, Fitch, Leinkram et al. and Kuerschner et al. does not render unpatentable these dependent claims for at least the same reasons provided above in support of the patentability of claim 1. In re Fine, supra (any dependent claim that depends from a non-obvious independent claim is non-obvious).

In view of all of the foregoing, withdrawal of this rejection is therefore respectfully requested.

V. Rejections of Claims 2 to 5 Under 35 U.S.C. §103(a)

Claims 2 to 5 were rejected under 35 U.S.C. §103(a) as unpatentable over the combination of Wainright, Fefferman, Fitch, Leinkram et al., Kuerschner et al. and U.S. Patent No. 5,759,230 ("Chow et al."). Applicants respectfully submit that the combination of Wainright, Fefferman, Fitch, Leinkram et al., Kuerschner et al. and Chow et al. does not render unpatentable the present claims for the following reasons.

Claims 2 to 5 ultimately depend from claim 1 and therefore include all of the limitations of claim 1. As more fully set forth above, the combination of Wainright, Fefferman, Fitch, Leinkram et al., Kuerschner et al. does not disclose, or even suggest, (i) ***directly*** smearing the prepared coating material on the quartz or aluminum-oxide-containing tube to form a film thereon, and (ii) retrieval of the quartz or aluminum-oxide-containing tube after the temperature in the stove is below 110°C and putting the tube under room temperature, as recited in claim 1, from which claims 2 and 5 ultimately depend. Further, the Second Affidavit of Kuang-Lang Huang, including the photograph attached thereto, further establishes the non-obviousness of claim 1. Chow et al. purportedly relate to nanostructured metallic powders and films via an alcoholic solvent process. Chow et al., however, are not relied upon to cure the critical deficiencies of Fefferman, Fitch, Leinkram and Kuerschner et al. Indeed, Chow et al. do not render the claimed range obvious, and Chow et al. do not disclose, or even suggest, (i) ***directly*** smearing the prepared coating material on the quartz or aluminum-oxide-containing tube to form a film thereon, and (ii) retrieval of the quartz or aluminum-oxide-containing tube after the temperature in the stove is below 110°C and putting the tube under room temperature, as recited in amended claim 1. Accordingly, it is respectfully submitted that the combination of Wainright, Fefferman, Fitch, Leinkram et al., Kuerschner et al. and Chow et al. does not render unpatentable claims 2 to 5, which ultimately depend from claim 1. In re Fine, supra (any dependent claim that depends from a non-obvious independent claim is non-obvious).

VI. New Claims 11 to 15

New claims 11 to 15 have been added herein. It is respectfully submitted that claims 11 to 15 add no new matter and are fully supported by the present application, including the Specification.

Since claims 11 and 12 depend from claim 1 and therefore include all of the features of claim 1, it is respectfully submitted that new claims 11 and 12 are patentable over the references relied upon for at least the same reasons more fully set forth above in support of the patentability of claim 1.

Since claim 13 includes features analogous to features included in claim 1, it is respectfully submitted that claim 13 is patentable over the references relied upon for at least the same reasons more fully set forth above in support of the patentability of claim 1.

Since claims 14 and 15 ultimately depend from claim 13 and therefore include all of the features of claim 13, it is respectfully submitted that claims 14 and 15 are patentable over the references relied upon for at least the same reasons more fully set forth above in support of the patentability of claim 13.

VII. Conclusion

It is therefore respectfully submitted that all of the presently pending claims are allowable. A favorable action on the merits is earnestly solicited.

Respectfully submitted,

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